Table S1. Rate constants for water substitution at $\mathbf{Rh_3}^+$ by methanol-d_4.

$[Rh_3(\mu_3\text{-}O)(\mu\text{-}O_2CR)_6(OH_2)_3]^+$ ($\mathbf{Rh_3}^+$)	*T* (K)	k (s^{-1})
R = CH_2CH_3	266.0	8.6 (±0.1) x 10^{-5}
	276.4	4.52 (±0.07) x 10^{-4}
	278.4	6.89 (±0.07) x 10^{-4}
R = CH_3	272.5	1.21 (±0.02) x 10^{-4}
	276.3	2.03 (±0.05) x 10^{-4}
	276.0	1.88 (±0.02) x 10^{-4}
	281.0	4.55 (±0.04) x 10^{-4}
	281.1	4.74 (±0.03) x 10^{-4}
R = CH_2CH_2Cl	273.2	3.3 (±0.1) x 10^{-5}
	276.2	6.6 (±0.3) x 10^{-5}
	276.4	6.69 (±0.06) x 10^{-5}
	279.6	1.05 (±0.04) x 10^{-4}
	283.0	1.73 (±0.04) x 10^{-4}
R = CH_2Cl	276.3	1.64 (±0.01) x 10^{-5}
	283.2	4.74 (±0.02) x 10^{-5}
	290.8	1.75 (±0.03) x 10^{-4}
R = $CHCl_2$	276.3	5.3 (±0.7) x 10^{-7}
	302.9	5.3 (±0.2) x 10^{-5}
	313.5	2.24 (±0.05) x 10^{-4}